A basidiomycete fungus isolated from a lignite-associated sediment at 1,929 m below the subseafloor

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Although fungi are the native inhabitants of almost every environment on Earth's surface biospehre, it ramains largely known if fungi are also present in the deep subseafloor biosphere and play ecological roles in the ecosystem. Here we reported a fungal species that was successfully isolated from a coal (lignite)-associated sediment sample obtained by the drilling vessel *Chikyu* from 1,929 meters below seafloor (mbsf) at Site C0020 (41°10'35"N, 142°12'01"E) off the Shimokita Peninsula, Japan during the Integrated Ocean Drilling Program (IODP) Expedition 337. According to the morphological observation and phylogenetic analysis based on 18S rRNA gene, Internal Transcribed Spacer (ITS) reagion, and partial 28S rRAN gene sequences, the isolatd species has been identified to be a member of *Irpex lacteus* belonging to the *Basidiomycota*, which has been documented as a common white-rot fungus that could live widespread in the phytosynthesis-based surface habitats (e.g., forest). Our succesful isolation of the fungi suggests that this species possibly live (or survive as spore) in the very deep subseafloor biosphere. Interestingly, the isolate exhibits ligninase and orange-G degrade activities, suggesting potential contibution to the organic matter degradation and coal formation.

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